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Winter of "Connecticut's Valley Forge"



Reenacted at Putnam Memorial Park

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Marks Named Conservation Officer of Year

Joseph H. Marks has been named DEP's 1978 Conservation Officer of the Year. Marks patrols the towns of Sharon, Cornwall, Goshen, Kent, and Warren in DEP's Region I. He previously covered a patrol area in Region II that included twelve New Haven area towns.

In recommending Marks for the award, Region I Law Enforcement Supervisor James R. Jones cited a variety of speeches and presentations -- on topics including conservation law, conservation careers, and fishing -- which Marks has made to civic, conservation, sportsmen's and other groups during the past year. Marks has also been involved in training of DEP patrolmen, development and teaching of a park patrolmen's course in rules of evidence, preparation of a paper on wildlife law enforcement, and the development, on his own time, of a slide collection for Department use. Marks, who has a Bachelor of Science degree in wildlife, is now studying criminal justice at Western Connecticut State College. He is a member of the Wildlife Society.

Howard G. Bluege, Law Enforcement Supervisor in DEP Region II and Marks' previous supervisor, seconded his nomination, noting that Marks has worked effectively in two very different patrol areas, that he has worked extensively with various groups, and that, while in Region II which was without a wildlife biologist, he initiated a number of worthwhile game projects on his own time.

The Conservation Officer of the Year award is made by the Shikar-Safari Club International. The group honors one wildlife management officer in each of the fifty states annually with a certificate and

plaque and a donation in the officer's name to the National Foundation for Conservation and Environmental Officers. Nominees are



Leslie Jacobs

recognized for their special efforts toward conservation of wildlife and natural resources, work "above and beyond the call of duty," and willingness to develop a well-rounded knowledge of the wildlife management field.

DEP Citizens' Bulletin

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Oh, Deer!

Leonard Lee Rue III, whose photographs you often see in the Citizens' Bulletin, has published a new book, The Deer of North America (New York: Crown Publishers, Inc., 1978). Its 463 pages are lavishly illustrated with Rue's photographs of deer. It should be available, for \$12.95, at most bookstores. You can also order directly, adding \$1.25 for postage and handling, from Leonard Lee Rue III, R.D. 2, Box 88a, Blairstown, N.J. 07825.

Credit: The mink on page nineteen of the November Citizens' Bulletin was photographed by Leonard Lee Rue III.

Encampment of military units, displays of Colonial life



On November 11 and 12, while close to 14,000 visitors watched, ancient muskets and cannon blasted to honor the 200th anniversary of Major General Israel Putnam's encampment during the bitter winter of 1778-9 at what is now Putnam Memorial State Park in Redding.

With the park's reconstructed log cabins and blockhouse as a background, this year's encampment dramatized the harsh conditions endured by the three brigades that George Washington had assigned to defend the Connecticut shore towns and Connecticut industries. The Continental Army operation was successful, but the suffering of the men was so great that the Redding encampment became known as "Connecticut's Valley Forge."

In charge of this year's program was Commander T. Raymond Pearson of the Fifth Connecticut Regiment Colonial Line, the group that sponsored the event. Many other military units were invited to the encampment, and more than twenty were present, including those to which some of the Massachusetts, New Hampshire, and Canadian troops under General Putnam had belonged.

In addition to parades, drills, inspections, trooping the colors, and infantry and artillery demonstrations, there were displays recalling the actual conditions of life in Connecticut two centuries ago. For example, Eighteenth Century crafts were demonstrated. There was a concert of Eighteenth Century music by the Germantown Ancients. On Sunday, Mel Johnson conducted an Eighteenth Century open-air religious service. Handsome uniforms adorned some of the officers, one of the distinctive features being buttons made of hand-cast brass. Perhaps the most dramatic non-military event was the skinning, butchering, and outdoor cooking of a deer, just as the troops might have done it in 1778.

Another noteworthy sight was the dramatic equestrian sculpture, "Putnam's Escape at Horse Neck" (now Greenwich, Connecticut). The sculpture, at the park entrance, shows the General riding his horse down a flight of steps to avoid capture by the British. The statue was created by Anna Hyatt Huntington, who completed it in her ninety-third year. She and her husband also gave the state

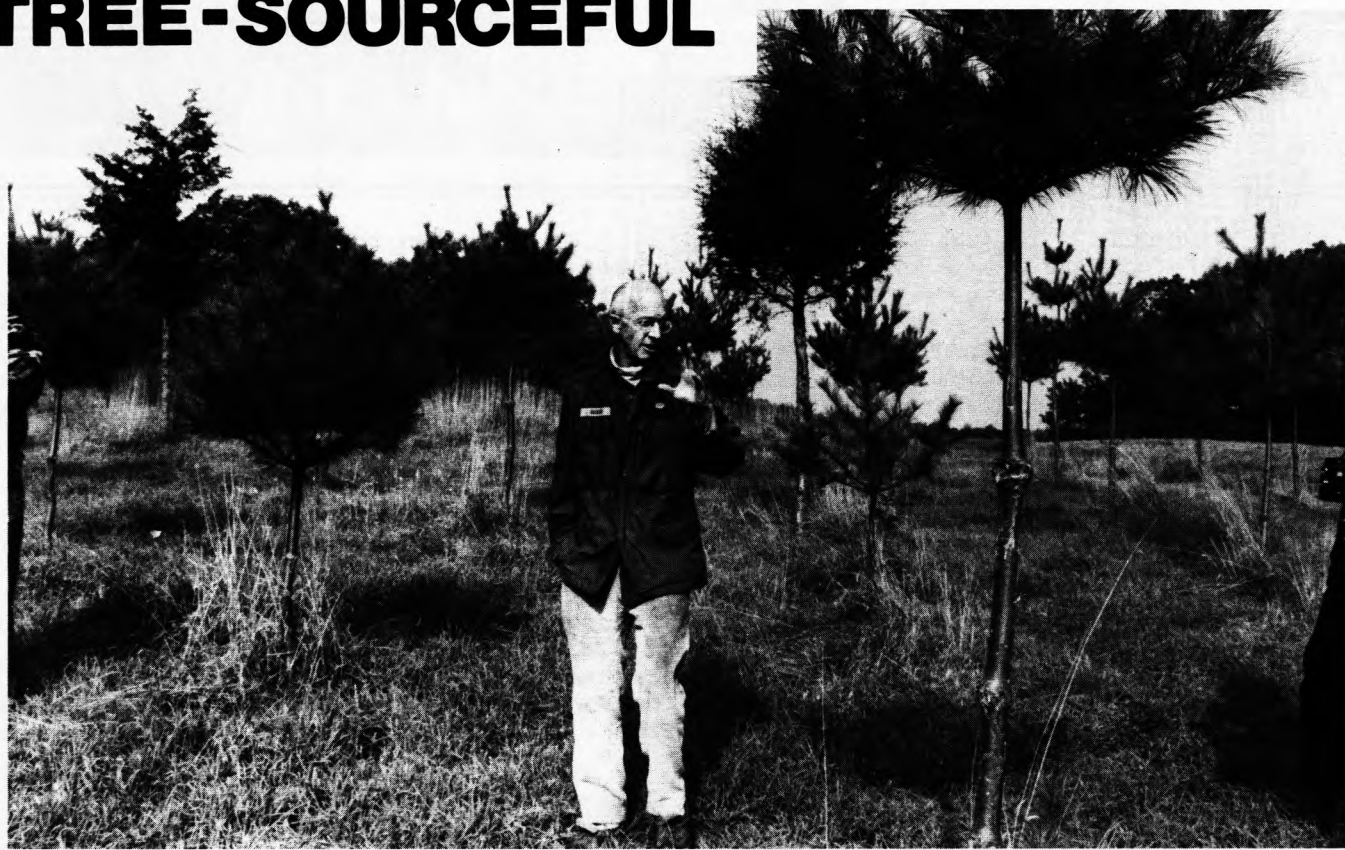


recall sufferings
of Putnam's troops
through 1778-79

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CONNECTICUT IS TREE-SOURCEFUL

Leslie Buckland shows his Manchester tree farm.



Forests aren't just the stuff that fills up the spaces between where things are happening. Connecticut's forests are an important resource, both aesthetic and economic.

To get out this message, DEP's Forestry Unit and the American Forest Institute took a group of Connecticut reporters and public relations persons out to see what's going on in Connecticut's woodlands. Their tour ranged from a look at how growing trees can play a part in preserving the State's diminishing open spaces to a view of trees as the raw material for one of Connecticut's newest industrial plants.

Leslie Buckland owns one of the smallest of the State's 140 registered tree farms -- 29 acres. "Think of me," he says, "as a conservationist. I'm not growing trees for profit . . . but for aesthetic reasons, for the joy and satisfaction. On this scale, if I were doing it for profit I'd go bankrupt."

Buckland was born on his land in now-suburban Manchester; it has been in his family since 1892. "I'm merely managing it," he says. "But I try to share it with my neighbors."

So five of Buckland's neighbors cut firewood on his property. Two ponds on the land can supply the local fire department in case of emergency. Over 35 to 40 years, he estimates, two to three thousand wood ducks have hatched out in box nests on his lands.

Buckland set out a stand of white pine nine years ago, when the seedlings were two to three years old. He has no immediate plans to harvest -- "unless I find some day that I'm starving." At 60 to 80 years old these trees will reach their peak usefulness, depending on the types of products they are to be used for.

Buckland's well tended pines do something at present, however, to pull their weight by the property tax break they provide. Twenty-nine of his thirty-six acres are certified by the State as forest land, with the remaining seven acres classified by the town of Manchester as open space. Connecticut law reads ". . . it is in the public interest to prevent the forced conversion of farm land, forest land, and open space land to more intensive uses as the result of economic pressures caused by the assessment thereof for purposes of property taxation at values incompatible with their preservation . . ."

"Development pressure around core cities is tremendous these days," says State Forester Robert Garrepy. "You have to be financially independent and a strong person to resist the \$15,000 to \$25,000 an acre they're paying for building lots. This pressure makes preserving natural areas in a developed region almost an impossibility."

The State Tax Department, he says, has established forest land values at \$30 statewide and \$40 in Litchfield County, based on present use rather than most profitable potential uses. Building lots in Manchester, which range from one-quarter to three-quarters of an acre, are assessed at values ranging from \$8,500 for smaller, older lots to about \$15,000. In Greenwich, for an even more dramatic example, residential lot valuations range as high as \$80,000 to \$100,000 per acre for prime waterfront sites -- which are zoned for two acres. At the other end of Greenwich's scale, some lands along the New York State line (zoned for four acres) are assessed at \$6,000 to \$7,000 per acre or \$24,000 to \$28,000 per site.

Taxes and open spaces aren't the whole story. Says Garrepy, "If you're holding onto land, and it's growing trees, why not get something back? We're trying to convince people to do something with their woodlands, to grow forest products."

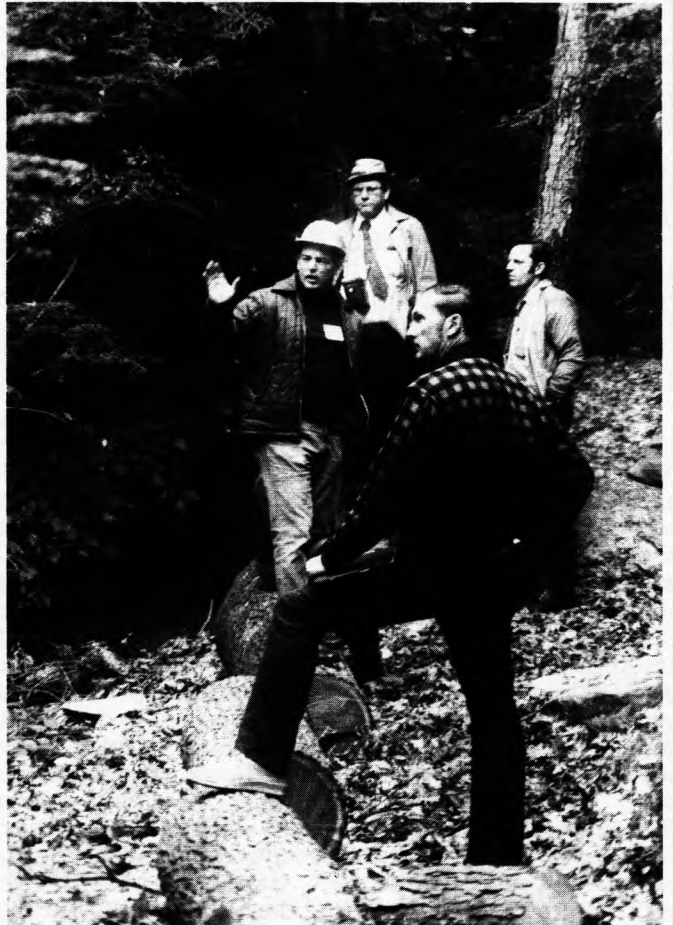
Given the rising costs of wood products, particularly the wood used for home building, Garrepy says, marketing available forest products would be doing the world a favor. A present, he notes, Connecticut is fifth among the states in population density and eighth or ninth in its percentage of forest land. About 58 percent of this land should be available for commercial production, but relatively few people are actually harvesting forest products.

The forest tour went on to show a few of the routes from woods to consumer. Hurd State Park provided the closest convenient scene of a logging operation -- and a lesson in why landowners should start managing their forests now!

Forestry in the State Parks is primarily geared to serving recreational purposes and ensuring safety. But some timber management is now being carried on in large forested areas where it is compatible with recreational uses of park lands.

Since the inland parks, in particular, are not heavily staffed and forestry personnel have been kept busy with other duties, for some of these areas effective management could have come sooner. "We have more problems in some of these areas today be-

FROM FOREST



Richard Harris

Above, Regional Forester Huber Hurlock, at left, explains forestry programs in State Parks to, from top: John Hibbard of the Connecticut Forest and Parks Association; Henry Haalck, Chairman of the Connecticut Tree Farm Committee; and Lester DeCoster of the American Forest Institute. Below, State Forester Robert Garrepy traces a tree's growth history from a core bored from its trunk.



cause of a lack of earlier vegetation management," said DEP Regional Forester Huber Hurlock. "Ten years ago we could have salvaged a lot more wood products -- just before or after the deaths of some decaying trees. A lot of loggers don't want these jobs now because there's not enough profit in them. High numbers of 'liability trees' in the stands mean a lot of services are required of the logger."

"That," Hurlock said, "and the need, since the area is a Park, for a logger who's very conscientious about working around other trees, means we have to accept less income per thousand board feet harvested to get quality logging services."

Next stop, after the logging site, was a sawmill in Rockfall, Connecticut, one of 115 in the State which produce over 60 million board feet of lumber annually. The Rockfall mill is one of five owned by the Rossi Corporation. It can produce 15,000 board feet of lumber per day. Its annual output is 3.5 million board feet of hardwood lumber -- most of which goes to foreign markets for fine furniture. Garrepy notes that the 'distressed' and knotty look of much 'Early American' furniture and paneling sold in this country today would never have satisfied real early Americans. They made their furniture of top quality woods. The Rockfall mill produces 1.5 million board feet of grade or better quality lumber; 1.5 million board feet of lower grade pallet stock; and half a million board feet of railroad ties and industrial wood products each year.

Rossi's five mills also produce 125 tons a day of wood residues, almost none of which are wasted. Bark stripped from logs

is sold for mulch. Sawdust is sold as livestock bedding. Slabs -- the curved outside pieces of logs -- and trimmings are sold to the Connecticut Charcoal Company for production of industrial charcoal to be used in metal refineries.

Rossi Corporation, which has staff foresters and four company logging crews, also uses seven contract crews. The company buys timber from landowners for a fifty to sixty-mile radius. Timber sales earn a total of about \$500,000 a year for some eighty to one hundred landowners. After logging operations, many landowners now also sell the "slash" -- treetops and cull logs -- as firewood.

Last stop on the forest tour was Perma Treat Corporation in Durham, maker of railroad ties. One of Connecticut's newest businesses, as well as one of the over 600 secondary wood processing companies in Connecticut, the corporation began operation in February 1978.

While its end product is not exactly a new one, Perma Treat's processes and prospects are definitely late twentieth century. Its owners foresee an expanding demand for railroad ties; as co-owner David Fink puts it, "We hope to get in on the change to energy consciousness and away from cars."

Fink doesn't see much of a competitive threat from the concrete railroad tie -- which, he says, weighs more, costs more, costs more to transport, and gives a worse ride.

Perma Treat is a "tree to tie" operation, with a newly hired forester; two contract logging crews; a sawmill that

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TO FINISHED PRODUCT

Lumber leaves Rossi saw mill in Rockfall, left. Railroad ties are readied for treatment at Perma Treat Corporation, right.





HOLD ONTO YOUR HIDE!

USE YOUR CHAIN SAW SAFELY

DEP Regional Forester Peter Babcock demonstrates some fundamentals of safe chain saw use.

DEP Regional Forester Peter Babcock offered the following tips on safe and successful chain saw use at a chain saw safety demonstration in the Nye Holman State Forest. The program, organized by Donald Francis of the Windham County Cooperative Extension Service, was part of a Natural Energy Day presented by the Connecticut Energy Extension Service at the Tolland Agricultural Center.

Babcock offered his safety tips with the hope that they would "make you nervous enough so you'll be sure to be careful."

- * We recommend a hard hat. (They're available at under \$10 from forestry and safety equipment suppliers. Your chain saw dealer probably has them or can order one.)
- * Gloves, heavy work shoes, and safety goggles are also recommended. Also long-sleeved shirts to prevent scratches. And ear protection for those who plan long sieges of sawing.
- * Don't wear loose-fitting clothes that could catch in a saw blade.
- * Read the manufacturer's instructions for your chain saw carefully. Make sure, in particular, that your saw's chain is installed correctly. Keep the chain sharp, and be sure it's adjusted to the correct tension.
- * Keep sawdust away from gas and oil lines. Rather than carry a saw way back in the woods and not have it start, clean the saw off carefully before adding fuel so foreign matter doesn't get into the gas tank.
- * Make sure you mix the correct amounts of oil and gas for your particular model. Marking each can to indicate the mixtures different engines require is a good idea if you also have an outboard motor or lawnmower or other pieces of equipment that take different gas/oil mixtures.
- * Fuel up in one place. Then, to minimize fire hazards, move before you start the saw.
- * Wipe off the saw if you spill gas on it to prevent explosions.
- * Carry the saw away from your body. Don't carry a saw with the engine running.
- * When you start the saw, and while it's running, keep both hands on it for control.
- * Keep both feet on the ground.
- * Don't cut above waist level -- where you can't control the saw in case of kickback.
- * Don't come up behind someone who's using a chainsaw. Be aware of where your companions are while you're cutting.

SAFE CHAIN SAW USE

Cont.

Check exit routes before you start. And never leave a partly cut tree.



- ★ Try to use the weight of the tree to put it down where you want it. But be careful with dead or hollow trees where everything might not be what it looks like from the outside.
- ★ Be careful cutting trees when the weather is wet or windy.
- ★ Clear the brush around a tree before sawing the tree itself so the saw doesn't catch in the brush and "kick."
- ★ Pay attention to what you're doing -- distractions can lead to accidents.
- ★ Watch out for dead branches above you -- especially as you're dropping trees.
- ★ Babcock recommends a log jack for rolling and lifting logs once a tree is down.
- ★ Don't have someone hold the log you're sawing.
- ★ Felling trees is not an activity for the children.
- ★ Let the saw do the work -- saws tend to kick if you push.
- ★ A front guard can also help prevent kick-backs.
- ★ Watch out for fatigue -- wood cutting is hard work.

Connecticut's TREE-sources

[From p. 6]

produces 20,000 board feet of lumber, including 250 railroad ties daily; and an ultra-modern tie treating plant.

In this last, eight to nine hundred ties per "charge" are vacuum dried for the necessary 12 1/2 hours in an eight by 105 foot pressurized cylinder -- and expandible affair that looks - and is - definitely space age. Ties are then pressure-treated with creosote for two-and-one-half more hours and vacuum dried for a final hour.

"We're giving our big, corporate competition a good run for their money," says Fink, "because our 16-hour Boltonizing process is so fast and because we're supplying railroads in New England and along the East Coast where our transportation costs are low. We can cut a log today, treat it, and ship it out as a railroad tie tomorrow. Which means we also don't have to tie up so much capital for so long."

The total picture is modern. There are air pollution controls. "And if everything

burst," Fink says of the pressure tank area, "the building is built like a swimming pool to keep any pollutants from flowing out." Finally the business end of Perma Treat's business is completely computerized, for a level of efficiency he says is "unique in the wood business."

Putnam Park Recalls 1778

[From p. 3]

878 acres for the Collis P. Huntington State Park in Bethel, which is now used for "passive" recreation such as nature observation, cross-country skiing, hiking, and snowshoeing.

Shortly after the Connecticut Legislature created a Putnam Memorial Camp Committee in 1887, gifts from interested citizens made it possible to purchase 102 acres for Putnam Memorial State Park. The park is now 183 acres and is easy to get to on Route 58 between Redding and Bethel.



YOUR WOOD STOVE NEED NOT DRIVE YOU TO A SLOW BURN...

...not if you plan before you purchase.

There's a lot you should consider before buying a wood stove, according to University of Connecticut Agricultural Engineers John Bartok and Edward Palmer.

Forget the fireplace

To start with, say Bartok and Palmer, for fuel efficiency forget fireplaces. Up to ninety percent of the heat goes up the chimney. If outside temperatures are 20°F or below, more heat goes out the chimney than you get from the fire. They recommend glass fireplace doors for a saving of about ten percent on annual heating bills.

Before you bring it home...

Before you buy, decide how you want to use the wood stove -- total or supplemental heating or just for emergencies. Figure out the size stove required for the area you plan to heat. Also consider whether the available space can safely accommodate a wood stove.

Also check local and state building codes. And consult your insurance company for the effect adding a wood stove might have on your coverage. It's also advisable, Bartok says, to have your local building inspector or fire marshall approve the installation before you put it in.

Compare costs

Consider initial costs of stove, pipe, chimney additions or alterations, and floor protection. They can run from about \$300 to \$1500. A wood furnace capable of heating the whole house might run from \$3000 to \$4000. You might also want to consider upgrading insulation before changing to wood.

Compare operating costs. Depending on stove efficiency and various other factors,

a cord of hardwood gives about the heat of a ton of coal. Softwoods give half to two-thirds the heat of a ton of coal. A cord of wood gives roughly the heat of 150 to 200 gallons of fuel oil or about 24,000 cubic feet of natural gas. Do you have steady sources of wood? Costs of ready-cut cordwood are rising, but cutting fuel wood is hard work and can be dangerous. As a rule of thumb on operating cost, Bartok says, "I usually say that with an efficient stove you can afford to pay up to \$60 a cord for wood and still break even."

Wood is the best bet if you own forest land. How many forest acres do you need? Typically, you can expect a sustained yield of about one-half cord per acre per year. A twenty-acre woodlot should provide a continuous, adequate supply of wood for most households. A ten-acre lot can supply three to four cords per year.

Season the wood!

Season your firewood for at least a year -- now is the time to be cutting and splitting wood for next winter. Shorter lengths of wood dry faster. Put the wood in a sunny spot, cover it, and let the sun do the work. When it's dry, the wood will have radial cracks and loose bark. Seasoning means greater heat since the heat required to drive off water from wood is wasted -- it doesn't warm the stove or the room. Air dried wood is about twenty percent moisture -- green wood has three times that amount of water.

Choose an efficient stove

Stove design affects the percentage of usable heat. (In tests, stoves generally burn about 45-55 percent efficient.) No one design, according to Bartok and Palmer, is best, but proper operation makes a significant difference. Heat radiating from stove pipes sometimes compensates for some inefficiency in the stove itself.



Stove design is critical because of the fact that wood burns in three stages. First, the moisture remaining in the wood must be removed as steam. Second, the wood must be raised to kindling temperature (550°F) to drive off the volatile gases. Here's where stove design is important. If the design lets these gases go up the chimney, you can lose fifty to sixty percent of the potential heat. The stove also must be heated high enough (1100°F) to ignite the gases and there must be room for them to mix with oxygen in order for them to burn. Finally, the charcoal burns. For this whole process, the old fashioned pot bellied stove was not a bad design, says Palmer.

Make it hot... for efficiency!

Bartok and Palmer recommend choosing from a range of airtight models. Best bets, they say, are two-draft stoves with baffles for high efficiency.

They caution that some models are not heating as efficiently as manufacturers promise because of the way they are being operated. Many imported high-efficiency wood stoves are designed to be tended every two to three hours to keep heat sufficiently high. These stoves are not capable of giving the eight hours or so of service that Americans tend to expect. "Many people," says Palmer, "are not burning wood -- they're cooking wood."

Fitting it in

Plan not to stint on clearance around the stove. And don't be cheap when it comes to stove pipe quality. Stove pipes must be no longer than ten feet and must enter the chimney above where they left the stove. Elbows should be kept to a minimum. Don't plan to run stove pipes through floors or ceilings. Use an insulating collar where you run pipes through walls.

Additional do's and don't's

Every owner should set up a stove pipe maintenance schedule for cleaning creosote out of stove pipes - somewhere between every two weeks and every four to five months depending on the installation. Wood stove users should seriously consider installing smoke detectors. If you have a chimney fire: call the fire department first; then close all drafts; control with chemical extinguisher, chimney flare, or a quart of water whose steam may put out the blaze.

Getting wood

You might consider dumps and landfills, but don't burn painted or treated

wood. Also look into: land clearing operations; utility company lands; slabs and treetops from logging operations. Be alert when buying "pickup loads" of wood; they usually contain only one-quarter to one-half a cord.

See for yourself

Would-be wood stove users would be wise to see Bartok and Palmer's slide presentation, which they have given about sixty times over the last three years and which is now also being offered by Extension Energy Associates in the State's eight Cooperative Extension Service offices. The University of Connecticut's Agricultural Engineering Department (486-2826) should usually be able to supply information about upcoming showings.

Recommended reading:

The 28-page booklet, Burning Wood, NE-191, is available for 75¢ from the Extension Agricultural Engineer, Agricultural Engineering Department, Box U-15, Storrs, CT 06286.

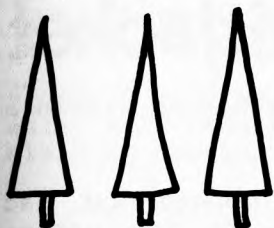
Also available: the brief free publications, "Heating with Wood," "Selecting Fireplace Wood," "Safe Wood Stove Installation Checklist," and "Burning Coal Safely and Efficiently."

The Woodstove Annual is available from the Connecticut Forest and Park Association, P.O. Box 389, East Hartford, CT 06108, for \$2.95 plus 75¢ for sales tax, postage, and handling.

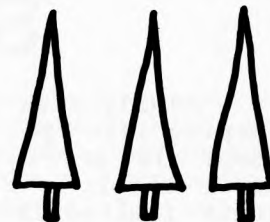
Turkeys On The Move

Eleven turkeys from Northwestern Connecticut's flock (see November Citizens' Bulletin) were recently captured and released in Eastern Connecticut. According to Dennis DeCarli, Chief of DEP's Wildlife Unit, attempts will be made to add more birds to this flock to ensure a rapid population expansion. These eleven should, however, provide a satisfactory nucleus for the establishment of the wild turkey east of the Connecticut River.

The relocated turkeys are being monitored with radio tracking equipment, so the Department is not asking people to report sightings of the turkeys. The Wildlife Unit does ask that the birds not be disturbed or fed and that persons report anyone who may be attempting to take wild turkeys or may be feeding them.



TREE-MENDOUS OFFERS



Over a million and a half tree and shrub seedlings will be sold at cost to Connecticut landowners under three popular State Forestry Unit programs to encourage forest management and reforestation, according to Martin Cubanski, Nurseryman at DEP's Pachaug State Forest Tree Nursery in Voluntown. He recommends that orders be placed as soon as possible.

Another four to five hundred thousand excess seedlings will be sold to the State of Rhode Island's Department of Natural Resources and to Massachusetts for similar programs conducted by those states.

The bulk of Connecticut's seedlings -- about seventy five percent, Cubanski said -- will be sold as part of the Forest Planting Program. About 1800 individuals took advantage of this long-standing and popular program last year, he said, purchasing anywhere from the minimum order of 250 to as many as 20,000 seedlings. Many of these will be raised to eventually be sold as Christmas trees.

About 400 owners of small parcels of land bought 150 tree and shrub wildlife/soil conservation packets. And another 2000 land owners bought 50-seedling buffer bunches last year. The Nursery is setting aside about the same numbers of these packages this year, Cubanski said.

FOREST PLANTING STOCK

Conifers are available to landowners in multiples of 250 for establishing a forest plantation or for commercial Christmas tree planting on one or more acres. Their cost is \$9.50 for 250 or \$38 per 1000. Buyers can select from white spruce, white pine, hemlock, larch, Douglas fir, Norway spruce, or northern white cedar. Hardwoods -- butternut, black walnut, or chestnut -- are available in groups of 10 for \$2.50. These seedling bundles must be picked up in April or May at one of ten delivery sites around the State.

WILDLIFE/CONSERVATION PACKET

Landowners who have space for at least 150 seedlings (one-quarter acre or more),

for wildlife food and cover or stabilization of soil, can order this 150-seedling packet for \$15. It's expected to include 75 conifers and 75 shrubs--50 white pine and 25 Norway spruce; 25 highbush cranberry, 25 autumn olive, and 25 silky dogwood.

BUFFER BUNCH

Landowners with less space, who would still like to attract wildlife, can purchase a Buffer Bunch containing 20 tree and 30 shrub seedlings for \$7. The group of six to twelve inch seedlings will probably include 10 white pine, 10 Norway spruce, 15 autumn olive, and 15 silky dogwood. Suggestions for planting designs are included.

- * Seedlings may not be used for ornamental plantings nor resold with roots attached.
- * All orders are due by April 1. Delivery is scheduled for, and best time for planting is, early April to mid May.
- * The nursery reserves the right to substitute species. There are no limits on numbers of packages that can be ordered, though numbers of any species in the Forest Planting Stock may be restricted if there is a shortage of any species.
- * Wildlife/Soil Conservation Packets and Buffer Bunches will be sent by UPS. Forest Planting Stock must be picked up at designated pickup points.

Order forms, with descriptions and suggestions for planting and use of various species, are available now from DEP's four regional offices:

Region I: P.O. Box 161, Pleasant Valley, CT 06063 (379-0771);
Region II: Judd Hill Road, Middlebury, CT 06762 (758-1753);
Region III: 209 Hebron Road, Marlborough, CT 06447 (295-9523);
Region IV: RFD 1, Box 23A, Voluntown, CT 06384 (376-2513).

SIP Overhaul: Do We Straitjacket

Avoiding an economic straitjacket and keeping air pollution sufferers out of hospitals are the two primary goals of a major effort now under way to revise the State Implementation Plan for Air Quality (SIP). This major overhaul of DEP's original 1972 blueprint for cleaning up air pollution is potentially the single most important document any State agency will prepare this year. Failure to submit an approvable SIP Revision to EPA will result in an end to economic growth in Connecticut after July 1, 1979.

In 1977 Congress put strong economic teeth into the Clean Air Act Amendments to be sure the states would make a major effort to clean up the air by its latest set of deadlines. The amendments provide the following sanctions for failure to have a SIP Revision approved by the U.S. Environmental Protection Agency on July 1, 1979:

- * a ban on major new air pollution sources;
- * withholding of federal highway funds;
- * curtailment of sewage treatment plant grants.

At present DEP's Air Compliance Unit is working on an overtime basis to prepare an approvable SIP Revision. Because the document will largely shape the way the State's future economic growth will occur, DEP has enlisted the help of a broad-based advisory committee composed of environmentalists, business leaders, local and regional officials, representatives of other state agencies, and members of the General Assembly.

Public participation and consultation with elected officials, in addition to being EPA requirements, are considered by DEP to be critical to the development and adoption of a strong SIP Revision.

1982, 1987 Deadlines

Connecticut, like many other states, failed to meet the original Congressional deadlines for achieving National Ambient Air Quality Standards. The 1970 Clean Air Act required that each state be in compliance with primary standards by July 1, 1975, with extensions to mid-1977 for some areas. Primary standards are pollution ceilings set by EPA to protect public health. Secondary standards are tighter ceilings to prevent damage to property and vegetation. The 1970 Act required the

secondary standards to be achieved within a "reasonable time."

As of July 1, 1977, Connecticut had failed to meet the standards for ozone, carbon monoxide, and particulates. As a result, the Clean Air Act Amendments of 1977 require DEP to adopt legally enforceable measures in the SIP Revision to achieve the standards for those pollutants by December 31, 1982. However, an extension is available for carbon monoxide and ozone until December 31, 1987.

In addition to adopting measures to achieve the standards, DEP must develop regulations to accommodate new growth and to guarantee continued compliance once the standards are met.

The Clean Air Act Amendments of 1977 also require DEP to adopt regulations to prevent existing clean air areas of the state from becoming polluted.

Industry vs. Transportation

The strategies DEP must consider to achieve the standards are highly controversial because they involve making fundamental choices about how Connecticut's economy will grow.

For all three pollutants, the State must decide whether to place more stringent controls on the industrial sector or to reduce transportation-related emissions by cutting back on the use of the automobile. At the heart of this issue is whether the State of Connecticut wants continued industrial development or an expansion of the highway program.

An analysis of the contributions of pollutants by stationary sources and transportation activities indicates that in Connecticut the transportation sector is the major source of each of the three problem pollutants. In the case of hydrocarbons which cause ozone pollution, mobile sources are responsible for 61%. In the case of particulates, mobile sources are responsible for 46%, and in the case of carbon monoxide, mobile sources are responsible for 93%.

Assuming Connecticut obtains an extension for meeting the ozone standard until 1987, DEP's Air Compliance Unit estimates that to meet the current ozone standard by that date, the State must reduce its total emissions of hydrocarbons by approximately 70% of 1976 levels. EPA is currently con-

Industry or Cut Vehicle Miles?

sidering a loosening of the ozone standard which will reduce the amount of hydrocarbon clean-up necessary.

Hydrocarbons and nitrogen oxides are the two pollutants that create ozone in the presence of sunlight and warm air temperatures. To reduce ozone, therefore, it is necessary to control hydrocarbon and nitrogen oxide emissions.

To achieve a reduction in the range of 60-70 percent, the State has several strategies available. First is the Federal Motor Vehicle Emission Control Program. This is the program which requires the auto industry to cut emissions of new cars as measured at the tailpipe. Most American manufacturers have achieved this by putting catalytic converters on their cars.

The second strategy, which the General Assembly has already adopted and which will be operational by 1981, is a mandatory inspection and maintenance program for all motor vehicles registered in Connecticut. The purpose of the program is to keep automobile emissions control systems functioning up to performance specifications.

The third strategy is actually a set of measures which EPA requires states to consider as reasonably available control measures, such as vapor recovery regulations at gasoline terminals and stations and other controls on certain categories of industrial process emissions.

The fourth strategy is the transportation plan review process. This strategy is perhaps the most controversial because it involves changing the State's transportation system to favor transportation modes, such as buses, light rail, van pooling, and bikeways, which result in air quality improvements over highway and road projects built to handle anticipated growth or generate new growth.

Reducing Vehicle Miles

The mechanism for making transportation plans mesh with Clean Air Act goals is called the transportation plan review process. This process requires metropolitan planning organizations and the Connecticut Department of Transportation to develop transportation plans which are consistent with the Clean Air Act requirements of meeting air quality standards by 1987.

DEP's analysis indicates that to achieve the 1987 ozone standard without adding extremely costly and stringent new controls on an already controlled industrial sector, the State's transportation system must provide for substantial reductions in hydrocarbons. Depending on how far EPA relaxes the ozone standard, the necessary hydrocarbon reductions could require significant steps to limit the increase of vehicle miles travelled in Connecticut. This could mean an end to new highway construction unless massive efforts are made to



get cars off the road by increasing transit ridership and carpooling.

Some of the strategies outlined above would also achieve substantial reductions in carbon monoxide.

TSP's: No Substantial Strategies

In the case of particulate pollution, the State faces a more pressing problem. No extension can be obtained, so Connecticut must meet the primary standard by December 31, 1982. The State currently violates the primary standard in one location in Waterbury and violates the secondary standard throughout the State.

Until recently particulate pollution was considered primarily as a stationary source problem, but recent studies indicate that the transportation sector plays a major role. Specifically, motor vehicles put out some particulate matter from the tailpipe. As tires and brake linings wear, particulates are thrown off into the air, and cars driving over dry road salt and sand kick up smaller particles that remain suspended. All of these causes contribute to the State's particulate pollution problem. One of the strategies being considered to curb this cause of particulates is additional street sweeping. No substantial strategies are available to further control stationary sources of particulates because these controls are already being applied.

Offset: Who "Owns" Clean Air?

The industrial sector also has challenging issues before it. For example, where the federal standards are exceeded -- which means the entire State for ozone/hydrocarbons and particulates -- no major new source of these pollutants will be permitted, even with the most stringent pollution control devices, unless that source can "offset" whatever air pollution it does create by eliminating some other existing sources.

In the case of hydrocarbons, the amount of offset required must equal the tonnage of hydrocarbons which the new source will produce with the lowest achievable emissions rates. In the case of particulates, the offset required equals the tonnage produced by the new source plus an additional 10 micrograms per cubic meter improvement in air quality. The additional reduction ensures that the trend line for particulate emissions slants downward.

One mechanism for obtaining an offset is for a new source to buy out existing small sources and close them down or improve controls on them beyond what current regulations require to obtain the necessary re-

duction. More sophisticated mechanisms are also possible.

The key issues in the offset policy are: who will own the rights to the air cleaned up by offsets, and will state or local governments have any controls over the offsets or will private sector markets take over completely? Major land use and development issues are at stake here, and DEP must come up with workable solutions within the next several months.

PSD: Keep Clean Areas Clean

The SIP Revision must also provide for a mechanism to "prevent significant deterioration" of the air in areas where neither primary nor secondary standards are now being violated. In short, clean areas will not be allowed to be polluted up to the secondary standard.

The prevention of significant deterioration program will be carried out by assigning allowable increments of existing clean air which may be used. EPA has developed the allowable increments for particulates and sulfur dioxide. However, since Connecticut is violating the secondary particulate standard statewide and the program only applies where pollutant levels are below primary and secondary standards, the only pollutant for which the increment program will initially apply is sulfur dioxide.

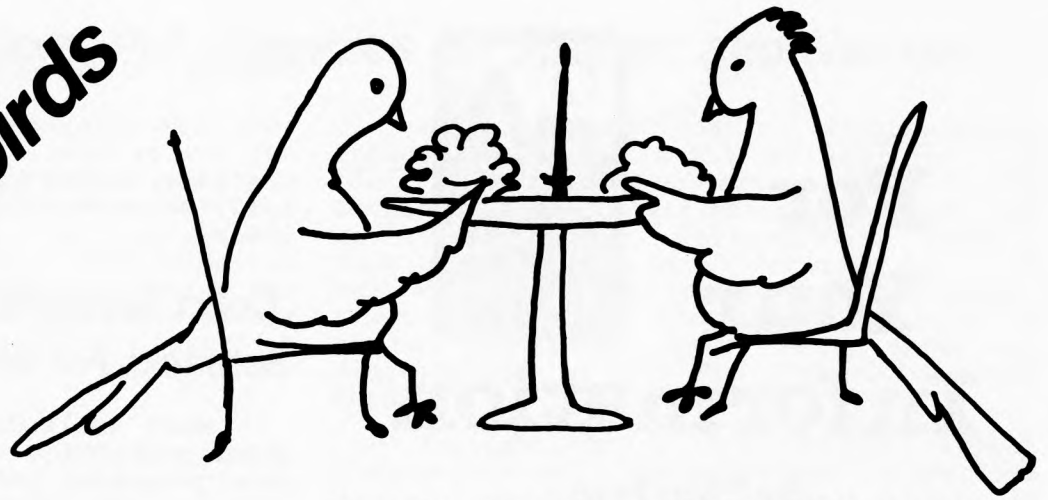
The net effect of the program will be to set a more stringent standard for sulfur dioxide in clean air areas. New sources in areas below the secondary sulfur dioxide standard will only be allowed to emit that pollutant in concentrations which will maintain sulfur dioxide levels below the new ceiling.

For local land use decision-makers in clean air areas, this program will have a major impact because the clean air increment will be smaller than it has ever been. DEP will not be allowed to issue permits for a new sulfur dioxide source, such as a large fossil fuel burning industry, if that source exceeds the new ceiling set to prevent significant deterioration. As a result, municipalities will have to be more selective than ever in guiding growth.

Hearings

As this Bulletin goes to press the draft SIP Revision is about to be issued. Public hearings will be held in January (See "FYI," page 16, for dates, times and places). For further information on the SIP Revision process call the SIP information number in Hartford: 566-2568.

For the birds



In recent years, bird feeding has become very popular. Many organizations hold birdseed sales in the fall, selling thousands of bags of seed suitable for bird feeding. Birdfeeders of every kind are popular items in stores. If you have been feeding birds for years or are anticipating starting a feeding program the following information may be helpful to you in cutting costs for your feeding program.

There is nothing wrong with buying a prepared seed mixture, however, by going to a local feed store and purchasing individual ingredients and mixing them yourself you can cut costs dramatically and, depending on the mixture, have less waste. Many commercially prepared feed mixtures contain ingredients that are not eaten in any significant quantity by most species of birds in Connecticut. These ingredients include red millet, milo, and wheat and can comprise upwards of 60 percent of commercially prepared seed mixtures.

What are the preferred seeds of most birds in our area?? Topping the list would be sunflower seed, followed by peanut hearts, finely cracked corn, white millet and canary seed. Most of these ingredients can be purchased at feed stores and mixed following the basic recipe that follows.

Steven O. Fish, Assistant Director for Education in DEP's Information and Education Unit, prepared these tips on haute cuisine for the birds.

You can vary the recipe by adding more or less of any of the ingredients. The advantages are that you create a mixture that is almost completely consumed by the birds, it is less expensive - it will cost you about \$25 for 110 pounds -- and you have the enjoyment of preparing it yourself.

As part of your feeding program you may want to put out some suet, which is actually pure fat and is a valuable source of calories in winter for many birds, such as woodpeckers, nuthatches, chickadees, blue jays and titmice. In addition, you may want to add thistle seed to your feeding program. It is a favored food for many birds, but it is very expensive and sometimes very hard to find in the stores.

Bird Feed Recipe

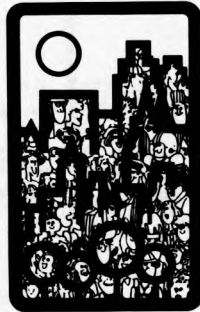
Mix together the following ingredients in a plastic trash container:

- * fifty pounds of finely cracked corn
- * twenty-five pounds of unhusked sunflower seed
- * twenty pounds of white millet
- * ten pounds of peanut hearts
- * five pounds of canary seed

The result is a fairly inexpensive bird feeding mixture ready for instant use.



For Your Information



By Ellen Frye,
Citizen Participation Coordinator

On The Air: DEP Wants You

Public hearings on the Air Quality State Implementation Plan (SIP) Revision will be held the week of January eighth at five locations throughout the State. The draft SIP revision describes the proposed strategies DEP will employ to insure air quality improvement and maintenance in compliance with federal air quality standards. Citizens concerned about clean air and the effect cleanup strategies will have on them can find the draft document at the libraries of the towns listed below beginning the week of December eleventh.

The SIP public hearings offer an opportunity for the public to comment on the new plan. Federal law requires comments on the final SIP submission. Your interest and participation in this process is important. Put the following times and locations on your calendar:

HARTFORD

Monday, January 8, 1979; 7:00 p.m. Snow date: 1/15; Hartford Insurance Group, Tower Suite, Hartford Plaza

STAMFORD

Tuesday, January 9; 7:00 p.m. Snow date: 1/16; Cloonan Middle School Auditorium, 7 North Street

NEW HAVEN

Tuesday, January 9; 7:00 p.m. Snow date: 1/18; New Haven Agricultural Station, 123 Huntington Street

TORRINGTON

Wednesday, January 10; 7:00 p.m. Snow

date: 1/17; Torrington High School Little Theater, Winthrop Street

NORWICH

Thursday, January 11; 7:00 p.m. Snow date: 1/18; Norwich City Hall, Court of Common Pleas

Court Supports Zoning Commissions' Setbacks For Wetlands, Watercourses

Many wetlands agencies are concerned about protecting wetlands and watercourses from potential pollution from sources outside the wetlands' boundaries, primarily septic systems. Some agencies have instituted setback regulations which essentially move their regulatory authorities to a specified distance beyond the wetland or watercourse. DEP's position is that the law gives these agencies authority to regulate only designated inland wetlands or watercourses as defined by the General Statutes.

Recognizing the importance of protecting wetlands from septage contamination, several towns have addressed this concern through local zoning powers (Section 8-2 of the Connecticut General Statutes). The Coventry Planning and Zoning Commission was recently challenged for requiring that septic systems be set back 50 feet from wetlands and 150 feet from watercourses.

The case of Breen vs. Town of Coventry Planning & Zoning Commission was decided in favor of the town on November 6th by Judge J. Hammer of the Superior Court of Tolland.

Judge Hammer considered the regulation "reasonable," most importantly because of its flexibility in authorizing the zoning agent to "reduce the setback if soils and hydraulic information shows the wetlands or body of water will not be detrimentally affected by installation of a particular system."

A number of environmental quality cases were cited in the decision. Judge Hammer said "preservation of water quality is therefore clearly a proper subject of municipal regulation provided it is exercised in a reasonable manner." The decision assumes the applicant may be able to make some reasonable use of the land. The regulation was therefore found to be a valid exercise of the zoning commission's statutory powers.

DEP is encouraging municipalities interested in setback regulation for environmental and flooding control to utilize local zoning powers and/or HUD Floodplain Regulations.

CEPA Regulations Put Agencies on Straight and Narrow

The Department of Environmental Protection has adopted final regulations for Connecticut State agencies called for by a 1977 amendment to Connecticut's Environmental Policy Act (CEPA). The regulations, according to Jonathan Clapp, DEP Principal Environmental Analyst, aim for uniform and consistent evaluations of all State agency activities that have a significant impact on the environment.

The new regulations require the preparation of Environmental Classification Documents listing types of actions that could have environmental significance. When any of the listed types of actions are proposed, agencies will be required to prepare either an Environmental Impact Evaluation or a Finding of No Significant Impact.

The new regulations call for the filing by every State agency that qualifies as a "sponsoring agency," of an Environmental Classification Document that lists those agency actions which could have environmental significance. "Sponsoring agencies" are, in general, those agencies undertaking activities including, but not limited to, "capital improvements, alterations, repairs, or additions to the real property of the State."

The document will include a list of typical agency actions which might have environmental impact, those actions whose environmental impact cannot be determined without further information, and a list of actions for which environmental impact statements are prepared pursuant to the national Environmental Policy Act.

Environmental Classification Documents will be made available to DEP, the Council on Environmental Quality (CEQ), other appropriate agencies, and interested individuals. Their availability will be announced in the Connecticut Law Journal and other media including the Citizens' Bulletin.

Comments on the documents may be submitted to OPM within 45 days. OPM, in consultation with DEP, CEQ, and the sponsoring agency, will approve or disapprove the Environmental Classification Documents.

The Environmental Classification Documents are due January 5, 1979, Clapp notes, which may cause some difficulties since major reorganization of some State agencies is scheduled to go into effect starting January 1.

A "clear" and "concise" Environmental Impact Evaluation shall be prepared "in plain language" for any action listed in the Environmental Classification Document as having significant environmental impact. Such an evaluation shall "provide full and fair discussion" of problems and alternatives and shall "be prepared early enough so it can practically serve as an important contribution to the decision-making process."

Availability of Environmental Impact Evaluations will be announced in various media. Any person may comment within 45 days.

If an agency's initial assessment indicates an action will not have a significant impact, the sponsoring agency will prepare a Finding of No Significant Impact and submit it to OPM, DEP, CEQ, as well as to any applicable town clerk and to persons who have indicated an interest. Comments may be submitted within 30 days. If dissenting comments are filed, OPM (in consultation with DEP and CEQ) will recommend whether an Environmental Impact Evaluation should be prepared.

The sponsoring agency will review comments and prepare a concise record of its decision which it will forward to OPM for a determination of the adequacy of this decision.

Grant to Cut Construction Red Tape

DEP has applied to the federal Environmental Protection Agency for a \$330,000 State Construction Management Assistance grant. The funds will support expansion of DEP's capacities for allocation, review, and administration of municipal sewage construction grants. Connecticut receives about \$50 million in federal funds annually for improvement of municipal sewage treatment programs.

As part of a federal effort to cut down bureaucratic red tape, the EPA has adopted a policy of promoting decentralized management in the wastewater construction grants program, placing the decision-making process at the state level and eliminating some federal/state duplication of effort. The elimination of dual reviews should speed the grant process and result in real cost savings. Locating responsibilities at the state level should also facilitate public involvement in the sewage facility construction decision-making process.

Persons with further questions can contact Tess Gutowski at 566-2588.

In Delicate Balance: Coastal and Inland Waters

It has been said that land management is an inseparable part of water resource management, because the way in which land is used directly affects the quality and condition of the area's water. So it also might be said that fresh water management is an inseparable part of salt water resource management -- a fact that is especially true and relevant for Connecticut.

All Connecticut rivers lead to Long Island Sound where they help deposit approximately sixty billion gallons of fresh water per year. For this reason, the Sound is often referred to as an "estuarine" body of water. Although salt water enters the central Sound at an overwhelming rate of five million gallons per second, the presence of measurable quantities of fresh water creates unique estuarine environments and makes special demands on salt water management.

Some of the areas which have unique functions along the coast are the mouths of Connecticut's three major rivers -- the Connecticut, the Housatonic, and the Thames. Anadromous species, such as the striped bass, rely on access to fresh water for spawning. Many species of finfish lay their eggs in the calm, fresh water areas, and their offspring spend their early lives there, protected from predators roaming the Sound and nourished by the abundance and availability of foodstuffs. Oysters and blueshell crabs are particularly dependent on the estuarine environment of the basin regions. There the relatively calm currents, solid substrate, and variety of food sources provide an attractive habitat for their productivity.

Other areas of interest related to estuarine influence are tidal marshes, which cover some 15,000 acres in Connecticut, and eelgrass beds. Tidal marshes are botanically specialized and enormously productive regions. Annually, their grasses, which become biologically decomposed and dispersed into estuarine waters, yield several tons per acre and account for a vital part of the aquatic food web. Eelgrass, which is located in protected areas afforded by estuaries, plays an important role in estuarine ecology. It helps settle muddy areas and slow currents, providing refuge and habitat for young finfish, molluscs, and crustaceans.


The importance of river mouth areas is compounded by the frailty of the estuarine ecosystem. Many species that inhabit estuaries have adapted so specifically that they cannot breed or reproduce elsewhere. And the abundance of food, resulting from the circulation of fresh water, salt water, and aquatic nutrients, produced by estuarine influence is critical to the equilibrium of the marine food web.

Prime sites for civic and industrial development have traditionally been located near rivers. Interference with the ecology of those areas has in many cases caused subtle environmental changes which have drastic effects. The slowing of river flow by dams, for instance, has caused siltation problems, whereby sediments are forced to settle upriver instead of being carried swiftly to deeper waters. This process disrupts the growth of vegetation and often necessitates dredging for continued navigational use, radically altering the character and physiography of the river.

As populations along riverbanks and seacoasts increase, considerable stress is placed on estuarine ecosystems. The filling of tidal wetlands and shallow water areas has seriously depleted food sources and reduced breeding and nursery habitats for many species. Increased amounts of sewage and demands for energy resulting from civic development have added to siltation problems, deposited harmful chemicals, and changed water conditions of Connecticut's rivers.

The Connecticut River alone accounts for seventy percent of all fresh water in the Sound. The condition of the Connecticut River clearly impacts on the condition of estuarine areas along the coast and on the lifeforms which are estuarine-dependent. If fresh water resource management is an inseparable part of salt water management, then an understanding of the interrelationships of inland and seaward ecosystems must be cultivated, and a coordination of management resources emphasized. Management of Connecticut's rivers is a vital link in the ecology of Connecticut's coastline and a primary concern of Connecticut's Coastal Area Management Program.

David Tedone, Public Participation Assistant with the CAM Program, is author of this month's contribution.



208

WATER QUALITY MANAGEMENT

209 COURT ST., MIDDLETOWN, CT. 06457 347-3700

By Joseph M. Rinaldi, 208 Public Participation Assistant

"AG 208" Will Study How Farms Affect Water Quality

A federally funded study of the effect of agriculture on water quality is getting under way in Connecticut. The nine-month project is part of a statewide effort under Section 208 of the federal Clean Water Act to meet the national goal of "fishable - swimmable" water by 1983. It will be run by the Connecticut Council on Soil and Water Conservation.

The objectives of the "Ag 208" study are to:

- * Identify water quality problems and potential agricultural pollution sources.
- * Recommend guidelines for locally developed conservation practices such as contour plowing, strip cropping, most efficient scheduling of fertilizer applications, etc.
- * Review existing control programs and legislation as needed.
- * Recommend which state and local agencies should implement long-term and cost effective water quality management programs.



John Breakell, formerly with the Litchfield Hills Regional Planning Agency and Litchfield Conservation District, will head the study group. During the next nine months, Breakell and his staff will meet with farm groups throughout the state to discuss agricultural pollution problems and their solutions.

Persons or groups wishing to learn more about this project are asked to write or call: Ag 208, Department of Environmental Protection, State Office Building, Hartford, CT 06115; (203) 566-8164.

Environment Gets Legal Help

Connecticut now has an environmental legal action group. The newly established Connecticut Fund for the Environment (CFE) plans to supply legal help to conservation groups and concerned citizens in bringing environmental issues to court.

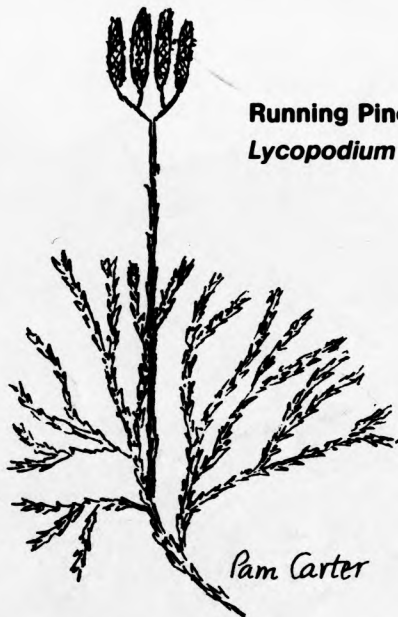
The CFE is organized under a twenty-one member board of directors which includes representatives from citizens' and environmental groups, government, business, and

the law. The group has set up legal and scientific advisory boards. According to CFE General Counsel Fred Krupp, they hope to hire a full-time staff attorney in January.

The CFE is currently conducting a membership drive. Contributions of \$15 or more can be sent to Connecticut Fund for the Environment, 152 Temple Street, West Haven, CT 06510.

Trailside Botanizing

by G. Winston Carter



Running Pine

Lycopodium complanatum

Pam Carter

Most clubmosses are very easy to distinguish one from another, but this is not true of the Running Pine. It can be quite

variable. The typical form of *Lycopodium complanatum* appears only in the far North. One reason for its variability, according to some investigators, is that it may hybridize with two other very similar clubmosses.

There is no general agreement among authors as to the common name of this plant. Some of the usual names are Running Pine, Ground Pine, and Ground Cedar. One writer even refers to it as Crowfoot Clubmoss, undoubtedly referring to the manner in which the flattened leaves fan out widely in one place.

This plant is usually found in rather moist woods where the soil is somewhat acid. It is useful to some degree as a soil anchor.

The life cycle of Clubmosses is extremely interesting. The spores that help to reproduce these plants are windblown and are usually borne on long spikes called "strobili." If the spikes are touched in early winter, the spores appear as a yellow powder. When they germinate, a stage in the cycle called the gametophyte generation develops. This is the sexual stage of reproduction. The underground sex-organ-bearing structures are very small and rarely known. From these, the clubmosses that we see develop. Botanists believe that it takes at least seven years, perhaps more, to develop the tiny sexual-reproducing stage. Added to this is another ten or more years which are required for this stage to develop the new young plant. This makes a life cycle of nearly twenty years from spore to gametophyte to the young plant again.

DEP citizens' bulletin

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Department of Environmental Protection
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